

sporangium (or in a sporangium in general) ought not to surprise us in the case of an ovule. Now it is certain that in *Isoetes*, the sporangia stand on leaves, in *Selaginella* and *Lycopodium* in the axil of the leaf, in *Psilotum* and *Tmesipteris* (as Gobel has lately pointed out) at the apex of a leafy axis. All these genera belong to the same circle of relationship, and also to the very one from which the Coniferæ have descended. The variations therefore serve to strengthen rather than to weaken our position. To be sure, we must give up the notion that the ovule represents either a leaf-segment or a bud, or has been derived from a metamorphosis of one of these two structures; it is the macrosporangium inherited by the phanerogams from the higher cryptogams, but more or less transformed and taking on, like that, a structure *sui generis*. It can be compared to an outgrowth ("emersion"), but it must not be regarded as the exclusive privilege of leaves, or as exclusively axial. The ovule may take its origin like other outgrowths from one organ, or another, or at the limits of the two (that is, in the axil of a leaf). This is plainly so in Coniferæ, as we have seen, and is the case in Angiosperms beyond a doubt." A minor question is incidentally discussed in the paper and again treated of in a subsequent pamphlet by the same author (Ueber Bildungsabweichungen bei Fichtenzapfen, Berlin, 1882). Monstrosities in the scales of fir cones had been adduced by some writers as evidence that the seed-scales are not simple but compound structures. A re-examination of the specimen used in support of this theory, and a study of other new examples have served to convince Professor Eichler that the carpellary "scale is a simple organ, but that by the appearance of a bud on the posterior aspect, it may undergo all kinds of deviations, and even split into two or more often three leaf-like lobes."—G. L. GOODALE.

Githopsis.—Baillon in Bull. Soc. Linn., Paris, no. 38, p. 304, states that besides wild specimens of *G. specularioides*, the herbarium of the Museum at Paris has specimens raised from Texan seeds in the Botanic Garden at Cambridge, which show that the capsule dehisces by triangular "*panneaux*" below the calyx; wherefore the genus subsides into *Specularia*. Now *Githopsis* is unknown in or near Texas, and has never been raised in the Cambridge Garden. *Specularia Lindheimeri* is Texan and has been cultivated here. It appears that Baillon has taken this for *Githopsis*.—A. GRAY.

Notes on *Ambrosia trifida*.—Last year I made quite extensive researches as to the facilities presented by weeds for the dissemination of seeds, hoping thereby to gain a true insight into their nature. The results show that an explanation is not to be sought here, but in their tenacity of life when injured, their power of de-

veloping branches in the lower axils of leaves, from roots, &c. In deed, many weeds are almost destitute of arrangements for the distribution of seeds. One of these is the common ragweed, *Ambrosia trifida*. In this I noted an occurrence, properly belonging to the study of Natural Philosophy, but which may interest even the botanist. The akenes of this plant have a stout central process, $\frac{1}{3}$ the length of the seed, surrounded at the base by five slight protuberances. On a clear morning, when the fields are covered with hoar-frost, go out into the fields in which this plant grew last summer. Wherever there is a seed exposed you find 5 or 6 strands of ice attached to these processes, sometimes separate but oftener in contact with one another, resembling asbestos in the arrangement of the "fibers" of ice. These, after making various contortions, resembling locks of hair, reach a length of $1\frac{1}{2}$ to 3 inches. During winter season the akenes are mostly half-buried by the earthy matter around them, but in the fall they lie loose on the ground. Now for our application to botany. The seeds being quite heavy generally are carried but a short distance from the stem; but when attached to these strands of ice, they are carried away by the winds, rolling over the ground; or the feet of animals in striking the ice—which always rises above the ground, often nearly perpendicular—propel the seed with the ice; and most frequently of all, becoming by this means attached to leaves, light twigs, &c., they are carried by these for short distances, which during the entire winter season, may amount to a considerable distance, for a plant presenting no other facilities.

Why do not other seeds, as well as our common ragweed, have these curls of ice? Or have they been noticed elsewhere? No doubt this plant offers peculiar facilities in this direction. The seeds present an extraordinary amount of surface by means of these processes, radiation of heat being more advanced here, they offer the first attachment for the dew, which precipitated on the seeds, forms the curls of ice, while at the same time the processes give direction to the strands thus formed, and instead of an irregular mass of ice we have "ice-curls."—AUG. F. FOERSTE, *Dayton, Ohio*.

Depauperate Rudbeckia.—An interesting instance of the change which may be effected in the habit and growth of a plant, came to my notice last fall. One day while out walking, I came across a specimen of *Rudbeckia hirta*, L., which was to me a curiosity. The leaves were all radical, and the solitary flower was on a veritable scape, leafless and bractless. The leaves and flower were of the typical *R. hirta*, but instead of the plant being tall and branched as it is usually, it was only two inches high. The next week my brother found another specimen of the same description. This latter was a little taller, being about six inches high to the top of the scape, but all the leaves were radical and the scape was leafless. This is an interesting instance of the way in which a